

TWO NEW GENERA FOR NEW WORLD VELIINAE (HETEROPTERA: VELIIDAE)

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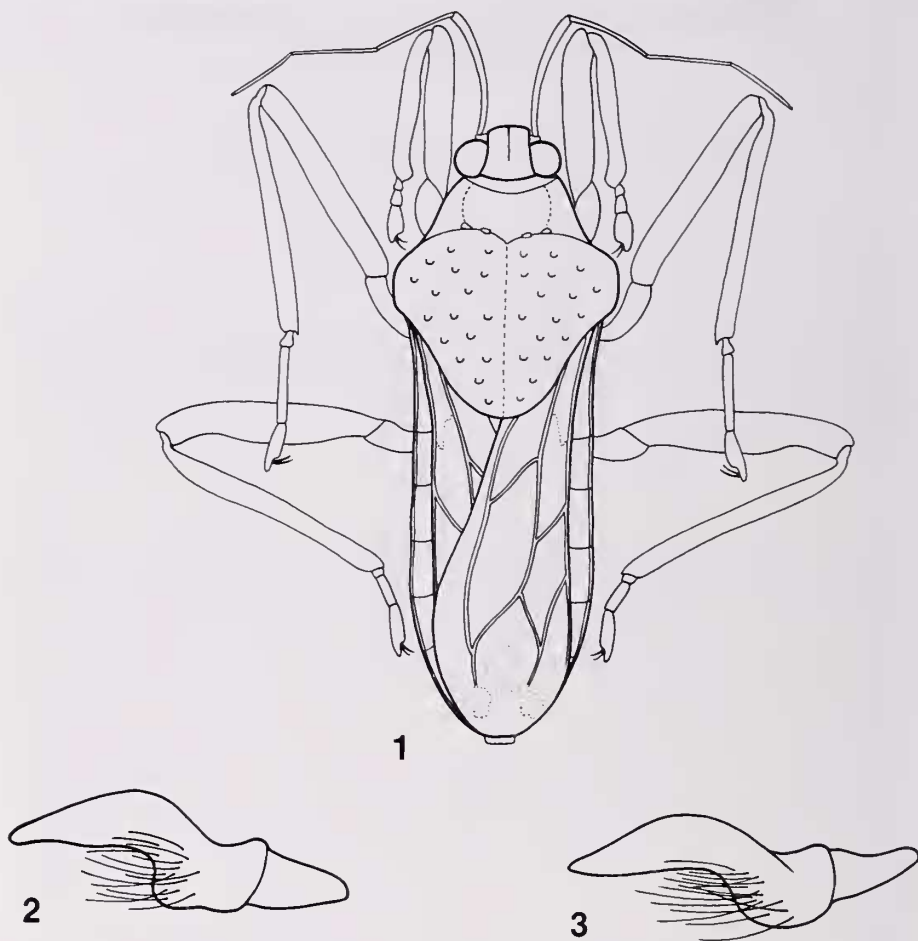
Abstract.—Two new taxa are proposed for veliids presently placed in the genus *Paravelia*; *Platyvelia* new genus, type-species *Velia brachialis* Stål, and *Steinovelina* new genus, type-species *Velia stagnalis* Burmeister. The synonymy of *Platyvelia brachialis* (Stål) 1860 and *Platyvelia australis* (Torre-Bueno) 1916 is discussed and confirmed. A checklist of included species is given for each new genus.

The subfamily Veliinae in the Western Hemisphere presently contains four genera: *Veloidea* Gould, *Stridulivelia* Hungerford (with 2 subgenera, *Stridulivelia* sensu stricto and *Aenictovelina* J. Polhemus), *Oiovelia* Drake, and *Paravelia* Breddin. Species of the last genus were included in the Old World genus *Velia* until J. Polhemus (1976) showed that they were distinct. With the notable exception of *Paravelia*, all of the foregoing New World genera are monophyletic. *Paravelia*, on the other hand, contains at least five recognizable groups that we believe warrant separate generic status; all of these are separable from each other by the structure of the thoracic sternum, or by the distinctive morphology of the abdominal terminalia in both males and females. Two of these groups are proposed as new genera herein, in advance of our anticipated larger work on the *Paravelia* complex as a whole, in order to stabilize the nomenclature for North America and to provide names for several ongoing studies, e.g., zoogeographical studies in our laboratories, and life history studies at Southern Illinois University, Carbondale. These two new genera, *Platyvelia* and *Steinovelina*, are easily separated from *Paravelia* Breddin by the markedly different morphology of the thoracic sternum (Figs. 5, 7). Both of these new genera contain undescribed species, and future revisions will be necessary for each of them.

***Platyvelia*, new genus**

Figs. 1-3, 5

Description: Ground color brown, marked with silvery pubescence. Robust (Fig. 1), length 4.0 to 6.5 mm, general body characteristics and size not sexually dimorphic. Eyes globose, exserted, separated by more than an eye width, appressed to anterior pronotal margin, without visible ocular setae. Head declivant anteriorly, recessed into pronotum, with usual three pairs of facial trichobothria; gular region short, often not visible. Rostrum with segment I extending far past bucculae, I and IV subequal in length and slightly longer than II, segment III about 4 times as long as II. Pronotum of apterous form raised medially; collar broad, prominent, set off by prominent foveae, sometimes laterally expanded into knobs posterior to eyes; anterior and



Figs. 1-3. *Platytelia brachialis* (Stål). 1. Dorsal habitus, macropterous male from Nueces River, Zavala Co., Texas. 2. Male paramere, individual from Nueces River, Zavala Co., Texas. 3. Male paramere, individual compared with holotype, from Nova Teutonia, Santa Catarina, Brazil.

posterior lobes set off by a transverse row of 4 large deep foveae; triangular lateral region of anterior lobe depressed, set with silvery setae; posterior lobe with numerous deep foveae, humeri not prominent, broadly rounded posteriorly, not modified, covering metanotum in some species. Pronotum of alate form longer, posterior margin extending farther caudad, humeri more prominent. Thoracic venter diagnostic, mesoacetabulae sculptured medially, posterior margin forming a large tubercle opposing an anteriorly directed tubercle on each side of metasternum (Fig. 5). Metasternal scent gland opening (omphalium) usually marked by a raised median protuberance on the posterior part.

Abdomen usually with small areas of silvery setae dorsally on connexiva at the

suture between segments; apterous and micropterous forms usually with silvery setae medially on tergite V, and laterally on tergites VI and VII; prominent paired longitudinal carinae on tergites II–IV and basally on tergite V of macropters (visible only after removal of wings), weakly indicated or absent in apterous form. Abdominal sternites set off from laterosternites by hair-free longitudinal striae or elongate lacunae, usually also by silvery setae; male sternite VII may possess a median process posteriorly. Micropters with elongate white wing pads; macropters with four closed cells in dark hemelytra with white spots in characteristic pattern (Fig. 1).

Legs stout; anterior femur often thickly set beneath with short dark setae; anterior tibia with a distal transverse comb of many stiff setae; middle, hind and sometimes anterior femora often set ventrally with numerous black denticles; middle tarsi long, claws very long and slender, when folded back reaching base of third tarsal segment.

Male genital segments large; proctiger unmodified; parameres symmetrical, broad, sculptured or elongate. Female tergite VIII on same plane as VII, truncate posteriorly; first gonocoxae large, exposed, plate-like; tergite IX small, button-like, protruding posteriorly.

Type species. *Velia brachialis* Stål, 1860.

Distribution. United States (mid Atlantic states, southeast, southwest) southward to Brazil.

Etymology. The generic name *Platyvelia* is derived from *platys* (Gr.), broad, referring to the robust body shape, and *Velia*, the nominate genus of the family. Gender feminine.

Discussion. This genus is easily separated from *Paravelia* and all other Veliinae by the position of the opposing tubercles on the meso- and metasternum (Fig. 5); in *Paravelia* the opposing tubercles are located either side of the midline and much closer together. The pattern of white spots on the hemelytra (Fig. 1) and corresponding markings composed of silvery setae in apterous specimens also constitute an apomorphy for the genus. The lack of ocular setae in both nymphs and adults of this genus is a characteristic shared with *Steinovelia* new genus (Fig. 6), several species comprising another New World group presently held in *Paravelia*, and the Old World genus *Ocellovelia*. This character is apparently a secondary loss, since such ocular setae occur in all other Veliidae checked, including many species in almost all of the presently described genera. Andersen (1982, p. 142) noted the lack of ocular setae in the Ocelloveliinae, the most plesiomorphic subfamily in his cladogram of Veliidae (p. 180), and stated that their absence is rare, but did not specifically state that they are present in all members of other subfamilies. With the presently noted exceptions, they seem to be uniformly present. Their absence in certain Veliinae, the most apomorphic member of Andersen's veliid subfamilial cladogram, strongly suggests that the loss has occurred independently in several veliid lineages.

Platyvelia brachialis (Stål), New Combination

Figs. 1–3, 5

Velia brachialis Stål, 1860:82. Holotype, macropterous male, Rio de Janeiro, Brazil; Natural History Museum, Stockholm.

Velia australis Torre Bueno, 1916:54. Holotype, macropterous male, Florida, Torre Bueno Collection, now at the University of Kansas, Lawrence (?). Synonymized with *Velia brachialis* Stål 1860 by Blatchley, 1926:1002.

Paravelia brachialis Polhemus, 1976:512. New combination.

Discussion. We have studied the type of *Velia brachialis* Stål as well as additional material from Brazil (Goiás, Santa Catarina), Peru, Surinam, Costa Rica, Nicaragua, Mexico and numerous localities in the southeastern United States. The parameres of examples from Texas and Brazil are shown in Figures 2 and 3. Although there are slight differences in parameres from different populations, we cannot consistently separate the populations from North and South America even after a careful analysis of many somatic characters, thus the synonymy above is considered valid for the present. The somatic characters that are useful in separating species of this genus include the armature on the legs and abdominal terminalia, length of setae on the legs, morphology of male sternite 7, details of body shape (especially the pronotum), banding of the legs, and antennal ratio. It may ultimately be shown that *P. egregia* Drake and Harris is also a synonym of *P. brachialis*.

Checklist of *Platyvelia* species

(All of the following are removed from the genus *Paravelia*)

<i>alvaradana</i> (Drake & Hottes) 1952. [<i>Velia</i>] New combination	Mexico
<i>annulipes</i> (Champion) 1898. [<i>Velia</i>] New combination	Guatemala
<i>beameri</i> (Hungerford) 1929. [<i>Velia</i>] New combination	Southwest United States
<i>brachialis</i> (Stål) 1860. [<i>Velia</i>] New combination	Southeast United States;
syn. <i>australis</i> (Torre Bueno) 1916. [<i>Velia</i>] New combination	Brazil; Peru
<i>egregia</i> (Drake & Harris) 1935. [<i>Velia</i>] New combination	Panama; South America
<i>maritima</i> (Polhemus & Manzano) 1992. [<i>Paravelia</i>] New combination	Colombia
<i>summersi</i> (Drake) 1951. [<i>Velia</i>] New combination	Southwest United States
<i>verana</i> (Drake & Hottes) 1952. [<i>Velia</i>] New combination	Mexico
<i>verdica</i> (Drake) 1951. [<i>Velia</i>] New combination	Brazil

Steinovelina, new genus

Figs. 4, 6–8

Description: Ground color brown. Body form slender (Fig. 4), length 4.2 to 5.5 mm, general body characteristics and size not sexually dimorphic. Eyes globose, exserted, separated by more than an eye width, not appressed to anterior pronotal margin, without visible ocular setae (Fig. 6). Head porrect to moderately declivant anteriorly, not recessed into pronotum, with usual three pairs of facial trichobothria; gular region long, depressed longitudinally forming a shallow sulcus. Rostrum with segment I extending far past bucculae, I and IV subequal in length and slightly longer than II, III about 4 times as long as II. Pronotum of apterous form raised medially; collar not raised, set off by prominent foveae; anterior and posterior lobes set off by a transverse row of large deep foveae; small lateral region of anterior lobe just anterad of this demarcating row of pits often set with silvery setae; posterior lobe with numerous deep foveae, humeri prominent and sometimes spine-like, posterior mar-

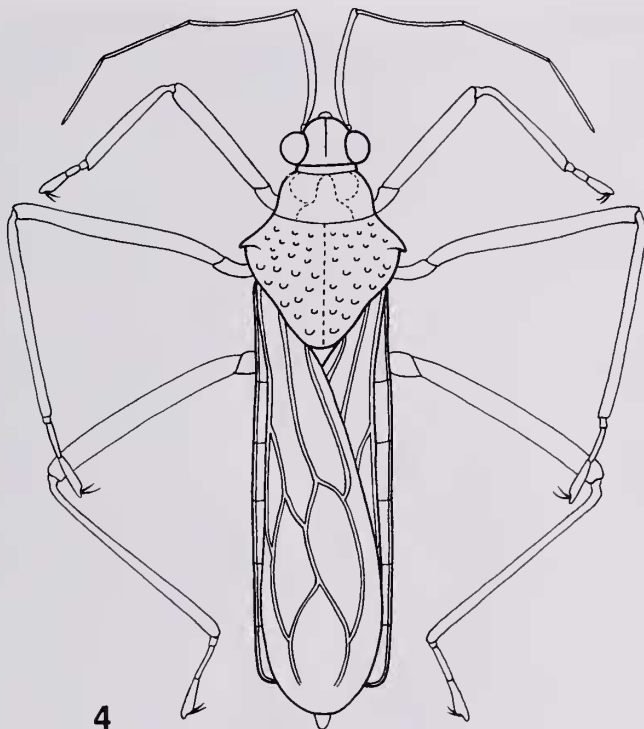


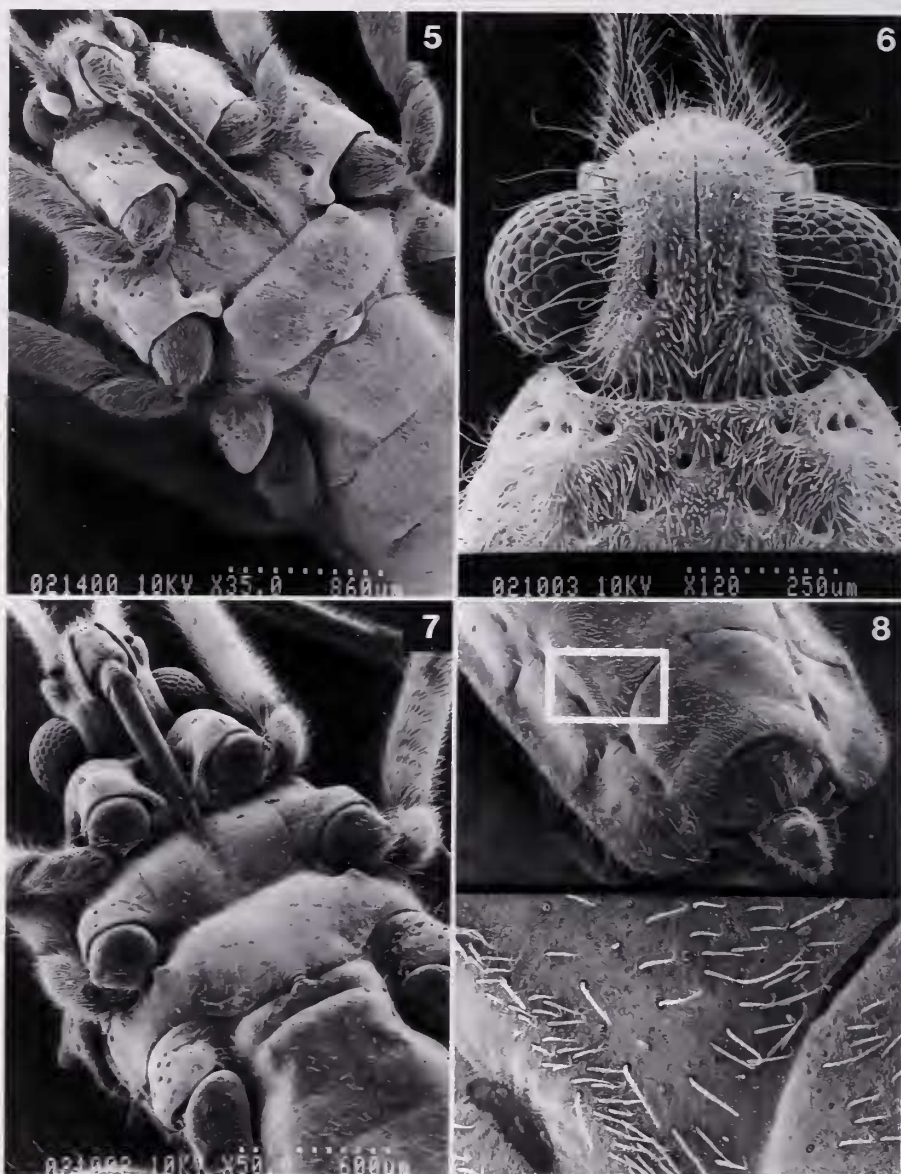
Fig. 4. *Steinovelgia virgata* (White). Dorsal habitus, macropterous female from Nova Teutonia, Santa Catarina, Brazil.

gin broadly rounded posteriorly, not modified, usually covering metanotum. Pronotum of alate form similar to apterous form, but humeri more prominent. Thoracic venter diagnostic, with meso-coxae opposing a pair (1+1) of anteriorly directed tubercles on each side of metasternum (Fig. 7). Metasternal scent gland opening (omphalium) usually marked by a small raised median protuberance on the posterior part.

Abdomen dorsally without silvery setae; prominent paired longitudinal carinae on tergites II and III of macropterous and apterous forms. Abdominal sternites set off from laterosternites by narrow hair-free striae (Fig. 8); male sternite VII not modified. Micropters with small narrow elongate brown wing pads; macropters with four closed cells in light colored hemelytra with prominent veins and brownish markings without characteristic pattern (Fig. 4).

Legs slender; anterior femur often thickly set beneath with short dark setae; anterior tibia with a distal transverse comb of many stiff setae; middle and hind femora often set ventrally with numerous black denticles; middle and hind tarsi similar, claws similar, of moderate length, slender.

Male genital segments large, elongate; proctiger unmodified; parameres symmetrical, usually narrow, elongate. Female tergite VIII on same plane as VII, broadly



Figs. 5–8. Scanning electron micrographs showing structural details of *Platyvelia* and *Steinovelia* species. 5. *Platyvelia brachialis* (Stål). Ventral view of head, thorax, and basal abdomen. Note opposing metasternal and mesoacetabular tubercles. Magnification 35 \times . 6. *Steinovelia virgata* (White). Dorsal view of head. Note absence of ocular setae. Magnification 120 \times . 7. *Steinovelia virgata* (White). Ventral view of head, thorax and basal abdomen. Note metasternal tubercles opposed to meso-coxae. Magnification 50 \times . 8. *Steinovelia virgata* (White). Ventral view of distal abdomen. Note shape and location of hair free depressions between sternites and laterosternites. Magnification 50 \times for upper image, 250 \times on inset.

rounded posteriorly; first gonocoxae large, exposed, plate-like; tergite IX protruding posteriorly, tapering, triangular, elongate.

Type species. *Velia stagnalis* Burmeister, 1835.

Distribution. United States (mid Atlantic states, southeast), Caribbean (Cuba, Hispaniola, Trinidad), South America (widespread from the north coast southward to Paraguay and Brazil).

Etymology. The generic name *Steinovelia* is derived from *Steinos*, a variant spelling of *Stenos* (Gr.), narrow, referring to the slender body shape, and *Velia*, the nominate genus of the family. Gender feminine. The name *Steinovelia* was used by Scudder (1890) for a Tertiary fossil water strider from the Florissant beds.

Discussion. This genus is easily separated from *Paravelia* and all other Veliinae by the position of the metasternal tubercles opposing the meso-coxae (Fig. 7). The long narrow body shape is also a characteristic of this genus. The lack of ocular setae in both nymphs and adults of this genus is a characteristic shared with only a few other Veliidae; see discussion under *Platyvelia*.

Checklist of *Steinovelia*, new genus

(All of the following are removed from the genus *Paravelia*)

<i>permista</i> (Drake) 1951. [<i>Velia</i>] New combination	Haiti; Puerto Rico; Trinidad
<i>placida</i> (Drake) 1951. [<i>Velia</i>] New combination	Trinidad
<i>stagnalis</i> (Burmeister) 1835. [<i>Velia</i>] New combination	Southeast United States;
syn. <i>paulianae</i> (Wilson) 1953. [<i>Velia</i>] New combination	Cuba
syn. <i>watsoni</i> (Drake) 1919. [<i>Velia</i>] New combination	
<i>vinnula</i> (Drake) 1951. [<i>Velia</i>] New combination	Brazil
<i>virgata</i> (Buchanan White) 1879. [<i>Velia</i>] New combination	Brazil

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